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Serial No.: 10/751,099
Examiner: Kyung H. Shin

AMENDMENT TO THE CLAIMS

Please amend the claims as follows:

1 (Currently Amended). A data link layer processor comprising:

~~one or more media access controllers (MACs), each of said one or more MACs includes a MAC preprocessor having a traffic police having a flow search engine with an ingress CAM, an ingress discard control logic, a first parser, an ingress meter module, and a mark generator, a MAC buffer, a VLAN push module, a first rate buffer and an ingress bus transmitter and a MAC postprocessor having an egress bus receiver, a second rate buffer and a VLAN pop module; a traffic shaper, operatively coupled to the one or more MACs, for discarding one or more frames that exceed a bandwidth requirement prior to transmission to the MACs.~~

a plurality of media access controllers, wherein each media access controller is operatively coupled to a physical layer interface; and characterized such that a traffic shaper is operatively coupled to said media access controllers for discarding one or more frames from a network processor that exceed one or more bandwidth parameters prior to transmission to the media access controllers.

2 (Currently Amended). A switching device comprising:

~~one or more physical layer interfaces for transmitting frames to a communication network;~~
~~a network processor having a classifier, a forwarding processor and an egress processor for routing the frames towards the one or more physical layer interfaces through at least one data bus;~~

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a management module and a queue manager having an ingress queue memory, an egress queue memory and a scheduler connected to the network processor; and a plurality of data link layer processors, wherein each data link layer processor comprises:

one or more media access controllers (MACs), each of said one or more MACs includes a MAC preprocessor and a MAC postprocessor, wherein each MAC is operatively coupled to a physical layer interface; and a traffic shaper, operatively coupled to the one or more MACs, for discarding one or more frames from the network processor that exceed one or more bandwidth parameters prior to transmission to the MACs.

a plurality of physical layer interfaces for transmitting frames to a communication network;

a network processor for routing the frames towards the physical layer interfaces;
and

a traffic shaper;

characterized by a plurality of network access modules, wherein each of said network access modules comprises a data link layer processor, wherein each data link layer processor comprises: a plurality of media access controllers, wherein each media access controller is operatively coupled to a physical layer interface; and characterized in that said traffic shaper is operatively coupled to said media access controllers, for discarding one or more frames from the network processor that exceed one or more bandwidth parameters prior to transmission to the media access controllers.

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3 (Original). The switching device of claim 2, wherein the traffic shaper discards the one or more frames in accordance with a Three Color Marker (TCM) algorithm.

4 (Original). The switching device of claim 3, wherein the TCM algorithm is selected from the group consisting of: single rate TCM, two rate TCM, and a combination thereof.

5 (Previously Amended). The switching device of claim 2, wherein the traffic shaper comprises:

- a meter module for determining a flow rate associated with the frames received from the network processor; and
- a discard control logic for selectively discarding said one or more frames based upon the flow rate and the one or more bandwidth parameters.

6 (Previously Amended). The switching device of claim 5, wherein the traffic shaper further comprises a marker module for marking the plurality of frames in accordance with a TCM algorithm.

7 (Original). The switching device of claim 6, wherein the one or more bandwidth parameters comprise a committed information rate (CIR) and an excess burst size (EBS).

8 (Original). The switching device of claim 2, wherein the traffic shaper comprises a flow search engine for classifying frames from the network processor based upon one or more properties associated with the frames.

9 (Original). The switching device of claim 8, wherein the flow search engine comprises a content addressable memory (CAM).

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10 (Previously Amended). The switching device of claim 9, wherein the CAM associated with each of the plurality of data link layer processors consists of QoS rules pertaining to the associated plurality of physical layer interfaces.

11 (Original). The switching device of claim 2, wherein data link layer processors are media access controller (MAC) processors.

12 (Original). The switching device of claim 2, wherein the switching device is selected from the group consisting of: a router, a multi-layer switching device, and a switch blade.